

REMARKS/ARGUMENTS

Reconsideration of this application in light of the above amendments is courteously solicited.

Initially the undersigned would like to thank Examiner Hoffmann for the courtesies extended during an oral hearing held with the undersigned and the inventor Dr. Frank Filser on April 14, 2005 at the U.S. Patent and Trademark Office.

The examiner in his office action dated January 10, 2005 rejected claim 28 under 35 U.S.C. 112, second paragraph as being indefinite. Applicants by the instant amendment have corrected the typographical error with respect to claim 28. Likewise, the typographical error which was introduced into the substitute specification has likewise been corrected.

Applicants refer to the PCT application as originally filed wherein the correct formula now set forth in claim 28 finds antecedent basis. In light of the foregoing, it is submitted that the rejection of claim 28 under 35 U.S.C. 112, second paragraph should be withdrawn.

As a result of the oral hearing held with examiner Hoffmann, independent claim 16 has been amended so as to set forth with more specificity the process steps of the present invention. In addition, Applicants have added new dependent claims 41, 42 and 43 which depend from independent claims 16, 32 and 33 respectively. Support for the claimed subject matter of

new claims 41-43 may be found in paragraph [0039] of the corrected substitute specification filed April 30, 2004. In light of the foregoing amendments, it is submitted that all of the claims as pending patentably define over the cited and applied Wohlwend reference for the reasons set forth hereinbelow.

It should be noted that U.S. Patent 6,106,747 was first applied as a reference against the claims in the instant application by Examiner Fiorilla on March 14, 2002. Applicants filed an amendment in June of 2002 presenting claims which were of a scope similar to the scope of the claims as currently pending. In addition, Applicants presented arguments in traversing the rejection of the amended claims under 35 U.S.C. 103 over the 6,106,747 patent. As a result of this amendment filed in June of 2002, the rejection of the claims based on the '747 patent was withdrawn. In this regard see Examiner Fiorilla subsequent action of October, 2002. Accordingly, it is respectfully submitted that this reference, U.S. Patent 6,106,747 has been previously considered and the claims as pending distinguish over this reference for the reasons set forth in Applicant's amendment of June, 2002, which amendments are incorporated herein by reference.

For the sake of completeness, Applicant presents the arguments for patentability of the claims as presented over the

'747 patent. The claims as currently pending clearly set forth a process which includes calculating an enlargement factor which is extremely precise as indicated for example on the last line of Page 9 of the instant specification. The determination of the enlargement factor is in accordance with the claimed formulation. As previously noted, and concurred by Examiner Fiorilla, U.S. Patent 6,106,747 does not teach, disclose, suggest or render obvious the determining step for the enlargement factor of the claims as pending. While the '747 patent does broadly suggest an enlargement factor, the particular mechanisms for determining the enlargement factor of the '747 patent is not disclosed and, as evidenced by the Table in column 5 of the '747 patent, the resulting enlargement factor is relatively primitive and not specific to the same degree as the now claimed determining step. The determination of enlargement factor in accordance with the present invention leads to a very precise factor number which ultimately leads to a very precise artificial tooth substitute to be fitted onto a prepared dental stump. The determination of the enlargement factor in accordance with the process of the present invention is not taught or suggested by the '747 patent. The process of the present invention clearly sets forth a critical step for determining an enlargement factor which leads to a beneficial result and this step and the result obtained therefrom is not at

all suggested by the '747 patent. When reading the '747 patent in its entirety it is clear that the object of the invention of the '747 patent is to try to solve a problem with warping. The approach taken by the '747 patent is to support the "tooth" during the final sintering step with a supporting working stump which is produced from chips during milling. Using water and some other ingredients, these chips and powder of the ceramic material is made into a paste to produce a product. The inventor assumes that the paste will have the same shrinkage that a green pre-sintered product would have. The assumption is incorrect as the paste will have a different density than the green or pre-sintered product. Thus, the shrinkage factor which is determined is rather crude. As noted above, this can be seen from the Table in column 5 of the '747 patent. There is, from the Table, no relation given between the characteristics of the blank to the enlargement factor. The Table gives a number of approximate enlargement factors. However, these approximate enlargement factors set forth in the '747 patent do not take into consideration density (which is extremely important in determining an enlargement factor) would lead to a very poor product. In accordance with the process of the present invention, the determination of the enlargement factor takes into account the critical features of density and, therefore, leads to a far superior product as a result of the accuracy of

the calculated enlargement factor.

In addition to the foregoing, the Wohlwend reference relies on copymilling the tooth substitute. Thus, our process as claimed does not rely on copymilling. Rather, in the process according to the present invention we first digitize, store the data, process the data to provide an enlargement factor, and thereafter program a tool path for obtaining the final artificial tooth structure. There is no copymilling as is done in the prior art.

Finally, as pointed out at the above noted oral hearing, the inventor of the process of the instant application received an International Award from the World Academy of Ceramics in 2004. In this regard, Applicant attaches hereto a notice of the award given to Dr. Filser. The examiner's attention is drawn to the section bridging Pages 3 and 4 of the attached document entitled World Academy of Ceramics. In addition, Applicants attach as evidence of commercial success a further submission from DeguDent which describes the commercial product resulting from the present invention and the fact that more than 600 systems for carrying out the process have been introduced commercially. Applicants are in the process of obtaining additional materials for the preparation of an Affidavit of Commercial Success which will be submitted in support of the

non-obviousness of the present invention upon the examiner's request.

In light of the foregoing, it is submitted that all of the claims as pending patentably define over the art of record and an early indication of same is respectfully requested.

An earnest and thorough attempt has been made by the undersigned to resolve the outstanding issues in this case and place same in condition for allowance. If the Examiner has any questions or feels that a telephone or personal interview would be helpful in resolving any outstanding issues which remain in this application after consideration of this amendment, the Examiner is courteously invited to telephone the undersigned and the same would be gratefully appreciated.

It is submitted that the claims as amended herein patentably define over the art relied on by the Examiner and early allowance of same is courteously solicited.

If any fees are required in connection with this case, it
is respectfully requested that they be charged to Deposit
Account No. 02-0184.

Respectfully submitted,

Frank Filser et al.

By 

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Date: May 24, 2005

I, Rachel Piscitelli, hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail in an envelope addressed to: "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313" on May 24, 2005.

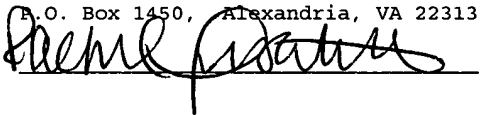


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Prize Laureates

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International Ceramics Prize 1992

Class: Basic Research

Laureate: Robert E. Newnham, Pennsylvania State University,
University Park, PA, USA

"For distinguished, creative and exceptional interdisciplinary contributions to the advancement of ceramics science and culture, especially in composite electroceramics including intelligent ceramics"



Robert E. Newnham

International Ceramics Prize 1996

Class: Industry and Innovation "Classical Ceramics"

Laureate: Filippo Marazzi, Gruppo Ceramiche Marazzi Spa,
Sassuolo - MO, Italy

"For outstanding technological achievements in the field of traditional ceramics, and specifically for the successful introduction of rapid firing of glazed floor tiles in monolayer roller kilns"



Filippo Marazzi

International Ceramics Prize 1996

Class: Industry and Innovation "Classical Ceramics"

Laureate: Joseph Recasens, Ceramiques Industrielles Saint Gobain,
Sorgues, France

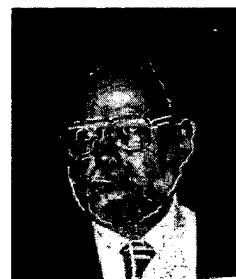
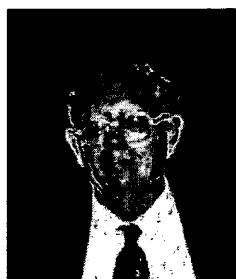
"For distinguished and creative contributions to the developments of new technologies and products in the refractory ceramics industry"



Joseph Recasens

International Ceramics Prize 1996**Class: Industry and Innovation "Advanced Ceramics"**

Laureates: Rodney D. Bagley, Irwin M. Lachman and Ronald M. Lewis, Corning Inc., USA

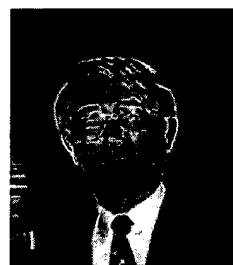


Rodney D. Bagley---- Irwin M. Lachman Ronald-----M. Lewis-----

"For remarkable achievements in the technology of advanced ceramics, and specifically for the invention of the cordierite honeycomb substrates for automotive emission control"

International Ceramics Prize 1996**Class: Industry and Innovation "Advanced Ceramics"**

Laureates: Isao Oda and Minoru Matsui, NKG Insulators, Japan



-----Isao Oda-----Minoru Matsui -----

"For outstanding achievements in the technology of advanced ceramics, and specifically for the development of the silicon nitride turbocharger rotors successfully introduced in the automobile market"

International Ceramics Prize 2000**Class: Basic Research**

Laureate: Roger A. Naslain, University of Bordeaux, France

"For distinguished and creative contribution to basic research"

on ceramic fibers and ceramic matrix composites"



Roger A. Naslain

International Ceramics Prize 2000

Class: Industrial Research

Laureates: David W. Johnson, Jr. and John MacChesney, Lucent Technologies, AT&T Bell Laboratories, USA



David W. Johnson-----John MacChesney

"For outstanding achievements in translating sol-gel science into a real technology, and specifically the development of large size sol derived glass bodies tailored to optical fiber production"

International Ceramics Prize 2004

Class: Basic Research

Laureate: Larry L. Hench, Imperial College, London, UK

"For the invention of Bioglass and subsequent distinguished scientific contributions resulting in outstanding commercial advances in the field of ceramic and glass biomaterials"



Larry L. Hench

International Ceramics Prize 2004

Class: Industrial Research

Laureate: Frank Thomas Filser, ETH-Zurich, Zurich,
Switzerland

"For the development of a commercial, all-ceramic
dental bridge
system based on direct ceramic machining"



Frank Thomas Filser

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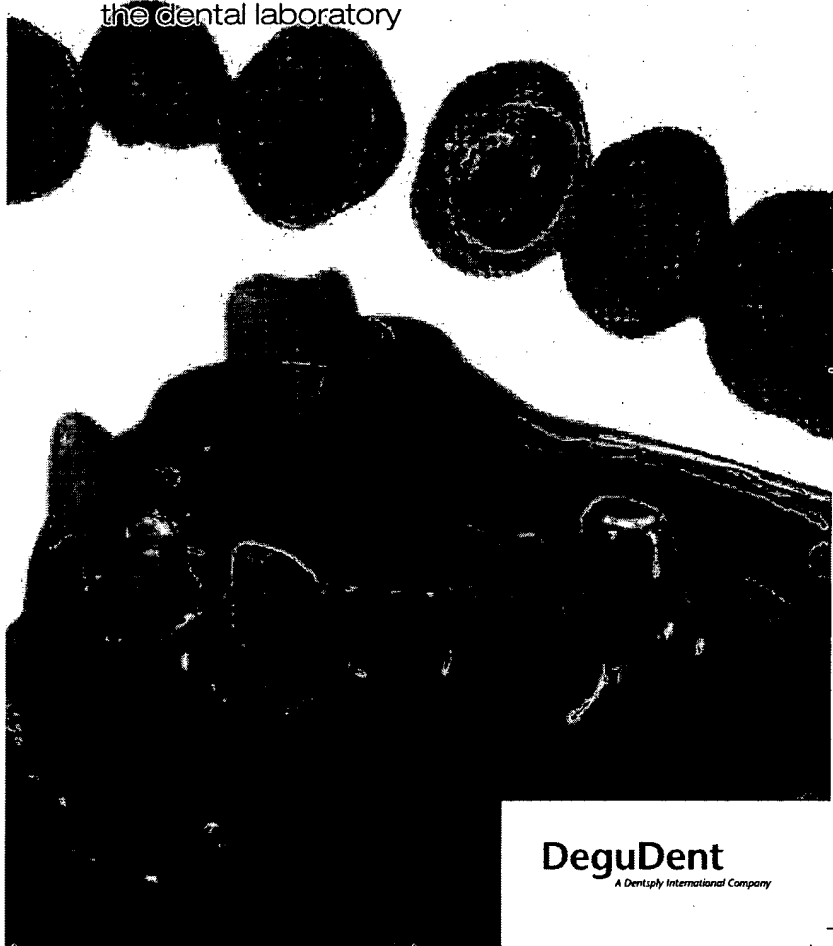
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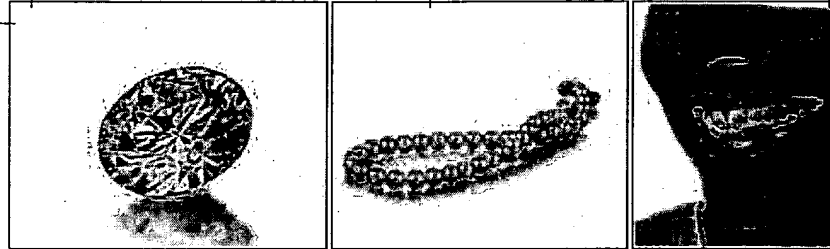
cercon smartceramics®

Information for the dentist office and
the dental laboratory



DeguDent

A Dentsply International Company



First of all: Thank you!

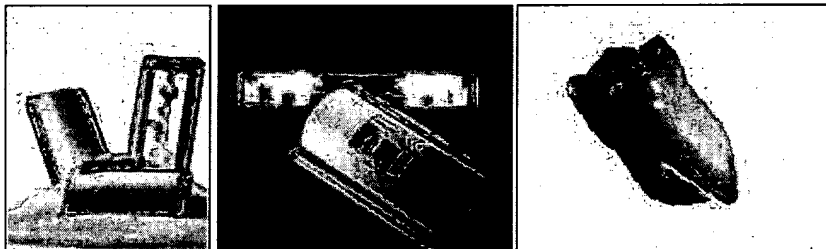
Since Cercon smart ceramics® was introduced in December 2001, more than 600 systems have been taken into use all over the world. During that time, more than 500,000 units were produced from our Cercon base zirconia material.

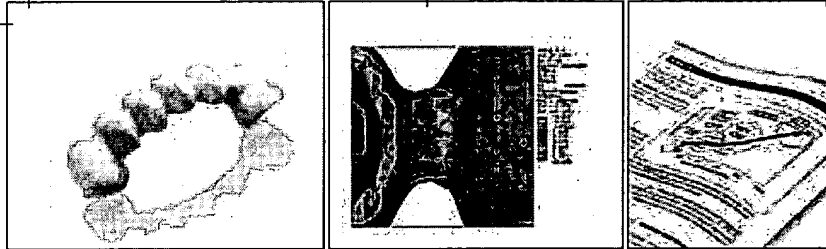
We would like to thank all patients, dentists and dental technicians for the confidence they have shown us and continue to show us, as these impressive figures suggest. The Cercon system is a convincing system and quickly got a good name in the market. The Cercon procedure has become established for a broad range of indications thanks to the nearly unlimited options it offers for creative design at the dental laboratory.

We are not yet able to approve all requests for new indications, since these must first be supported by reliable studies, a process currently under way. As with so many products, dental technology is the driving force behind innovation, and this is certainly true of zirconia all-ceramics.

And another thing to be pleased about: Some other manufacturers have adopted our CAM process and the method of milling pre-sintered zirconia. This again confirms that the Cercon smart ceramics system drives the entire zirconia all-ceramics market, and you as a Cercon user are contributing to this development.

In the little brochure that you have in front of you, we have compiled the most current and the most important information on our system. But we would prefer to talk to you in person and show you the world of possibilities Cercon® gives you, specifically for your own laboratory. We will be happy to serve you.





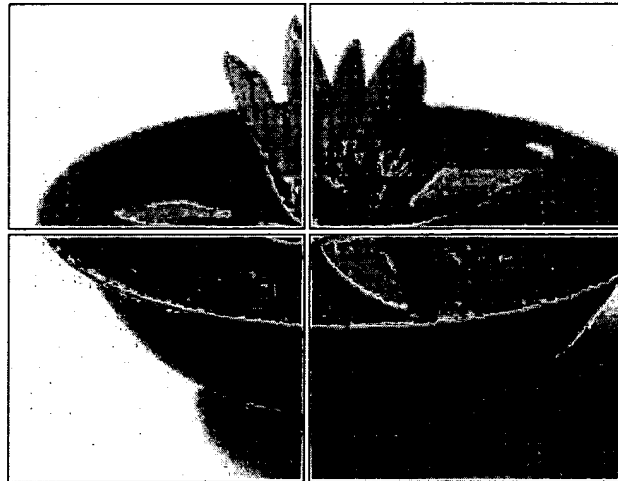
When desires become potential realities

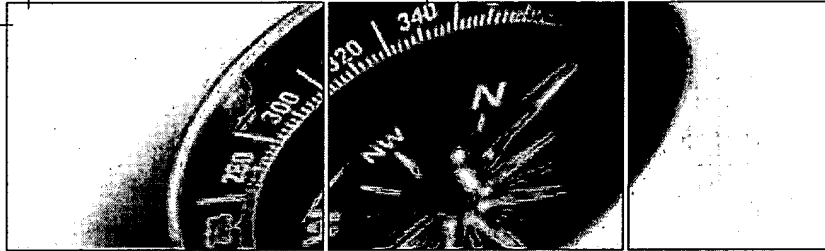
There is no doubt that quality dental restorations continue to be feasible using other materials. And there is no questioning the aesthetic results that can be obtained.

Yet, more and more we are facing patients who want metal-free restorations for themselves – whether because of incompatibilities or aversions or simply because they simply want to minimize the residual risk. Cercon lets you fulfil these patients' wishes.

Our reports, advertisements, and TV clips in various media of general interest have reached out to many potential patients and shown us several important things: Patients want to be informed of different therapeutic options when

seeking dental treatment. Patients are willing to pay extra for service and quality for "new teeth" that perform beyond what the standard health plan provides for.





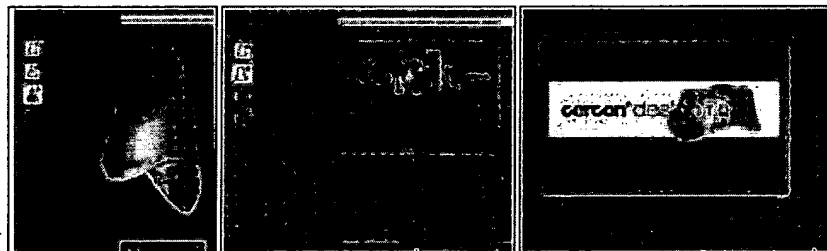
CAM or CAD/CAM – still a question?

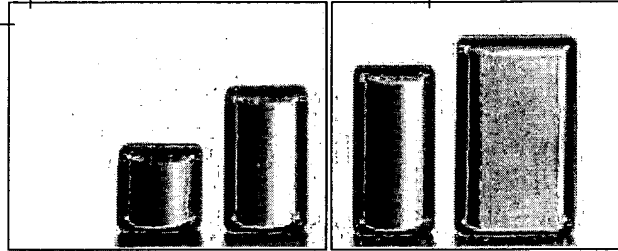
That even a "CAM only" system has its advantages is convincingly proven by Cercon every single day. But it is gratifying to learn that even this system still has the potential for upgrades that add real value. With **Cercon design**, we are offering a CAD module, initially for designing single-tooth crown frameworks that are then milled using the Cercon brain unit.

Since the "simple" geometric tooth shapes can be quickly designed on the screen, it is only natural for us to offer you that option. The **Cercon move** component, our innovative navigation unit, lets you continue to keep the object under your own control.

As you have come to expect from DeguDent, our Cercon design module sticks to the principle that every single part of the Cercon system must be uncomplicated and easy to operate. A user interface with a clear structure, process steps that are simple to follow and a milling strategy developed for fast and precise results are only some of the characteristics of the Cercon design module.

Customized wax modelling offers advantages and variety which will never be duplicated by any "design library", no matter how extensive. It is these advantages that we have begun to complement with a virtual design/modellation environment, Cercon design. Even the basic version is an ideal supplement for our "classic" Cercon system.



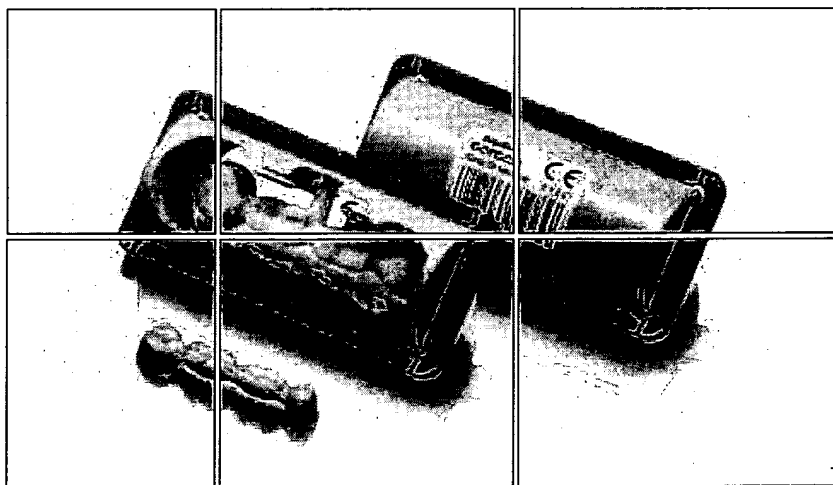


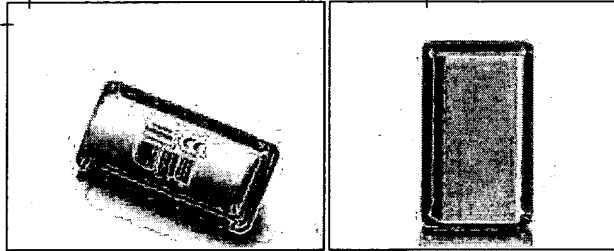
Enter ... color!

Cercon base zirconia blanks present themselves in the white color of noble porcelain. But even if this most perfect of all colors makes its advantages felt in many tasks, it also has its limits, such as when reproducing tooth color in areas where the veneering layer must remain thin.

Cercon base colored – zirconia blanks with an ivory color – offers an excellent baseline color supporting a splendid veneering result with formidable aesthetics. The same color is excellently suited for zirconia primary crowns.

As always with DeguDent, safety considerations are our foremost concern. Thanks to our exacting production standards, Cercon base colored will always offer you the same high quality, blank by blank by blank. No extra effort is required for manual coloring.





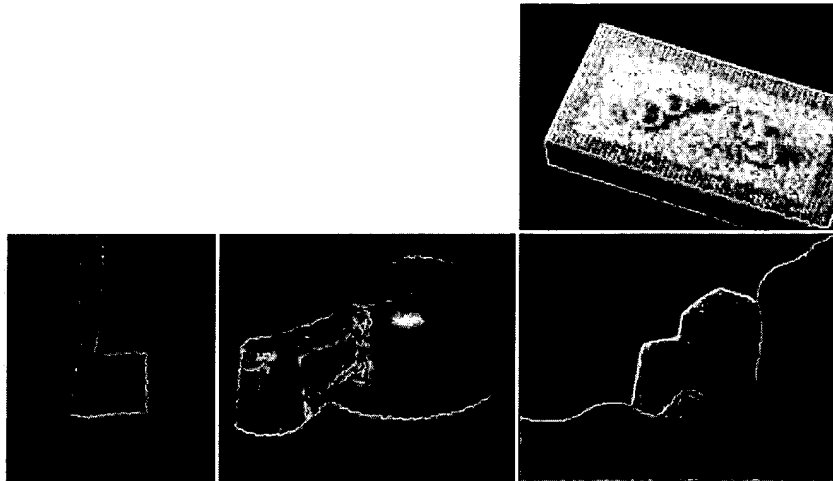
Size XXL dental restorations

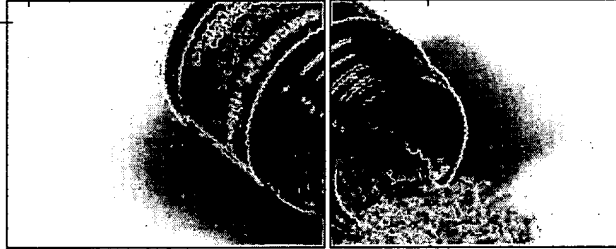
The **Cercon base 47** zirconia base will bridge a lot of gaps. Six or seven units (with two pontics in a row) in the anterior or posterior region should pose no problems even with extensive dental arches. The **Cercon brain** will gladly accept and mill this XXL blank and process it at a speed that will even keep your cost accountant happy.

In their **sintering bed**, these objects are perfectly accommodated by the **Cercon heat** unit (which of course is equally suitable for smaller units).

In situations in which abutments diverge, the **Cercon link** construction element will assist you in creating bridges of up to 47 mm in anatomical length. Until we have completed our loading studies, you will be on the safe side by using Cercon link for linking no more than two pontics.

This construction element was specially designed to make the most of the excellent material specifications of zirconia, using the fine-element method. Utilize the entire width of Cercon link. You have adaptation options from basally along its height.

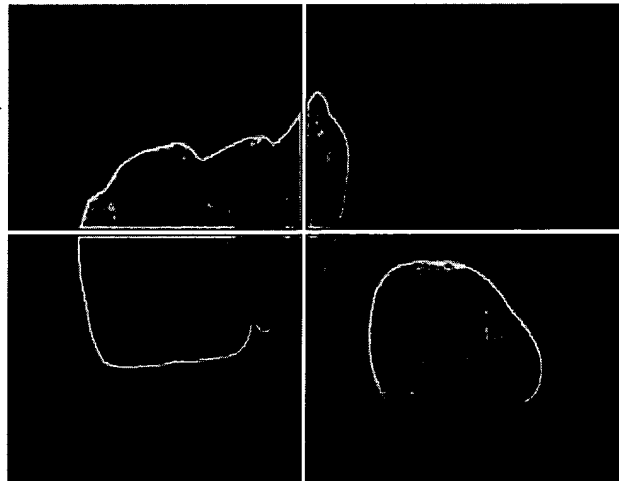


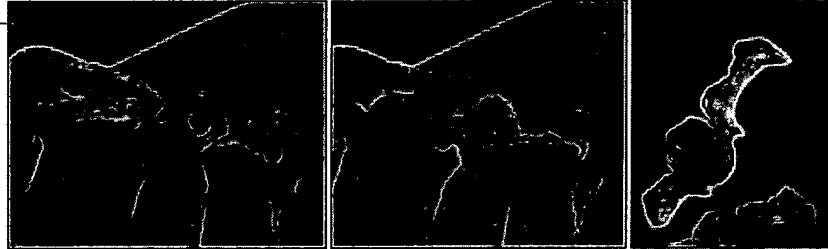


Attention paid to aesthetics: Cercon ceram kiss

The veneering ceramics complement the system perfectly. The high level of acceptance among patients is attributable primarily to the aesthetic appearance of a full-ceramic restoration. To ensure that you can achieve this desirable result easily and reliably, particular importance is attached to matching the individual powders to one another. The guiding principle of the system applies here too: Every wish is catered for with **Cercon ceram kiss**, the new veneering ceramic.

- Developed especially and exclusively for veneering Cerconoxide frameworks.
- Economical to work with: You can cover a broad color spectrum by combining just a few powders.
- All types of teeth can be reliably reconstructed – from young people's teeth to "old teeth".





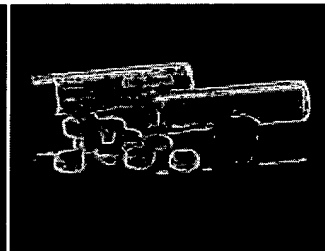
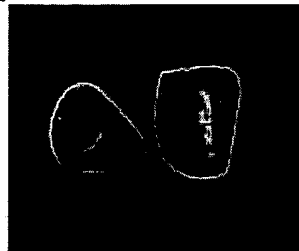
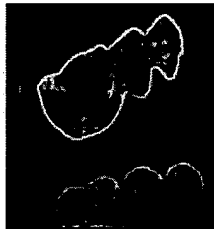
Build-up technique was yesterday, Cercon ceram express is today...

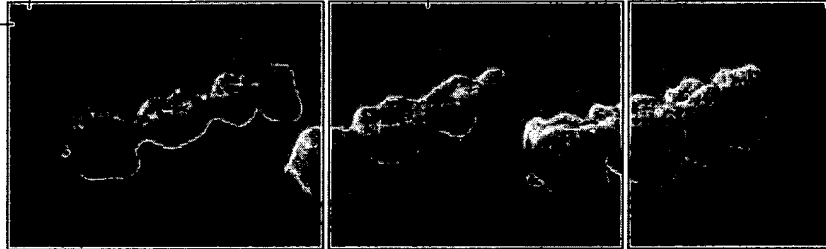
...well, things are certainly not quite that way. And the ceramic build-up technique with its excellent aesthetic results will be around for a long time.

On the other hand, **Cercon ceram express** has the potential of expanding your range of all-ceramic offerings: pressed posterior zirconia frameworks with stained tooth color, the so-called press-and-stain technique. Or take the anterior region with a layered veneer using the cut-back technique.

This procedure is also most suitable for precise shoulders, inlays or inlay bridges, partial crowns and implant superstructures. You will be excited how quickly you will discover the perfect and economically promising application for pressable ceramics for your own laboratory.

Cercon ceram express comes in two versions: Use the translucent anterior pellets for the anterior region for which you prepare the framework with a suitable liner before pressing. Use the more opaque posterior pellets for the posterior region. These pellets are pressed directly onto the zirconia framework.





Everything has its time

The past forty years were the heydays of the porcelain fused to metal restoration. The coming decades will be the time of zirconia.

We fully understand that this new system is most closely scrutinized where it is supposed to be used, namely in the dental office, the "point of sale". What will the clinical picture be like in the long term? DeguDent has addressed this point ever since we began to develop Cercon smart ceramics.

Like hardly any other manufacturer, we have invested and continue to invest in clinical research around this system. For the same reasons we like to support dental offices with a broad range of informative materials.

We will be happy to supply to you, free of charge:

- Cercon smart ceramics brochure
- Clinical Manual
- Scientific results
- Posters for the dental office





**A smart solution for an innovative material:
Cercon smart ceramics –
the zirconium oxide full-ceramic system.**

Framework material	Zirconium oxide <ul style="list-style-type: none"> • Cercon base (white) • Cercon base colored (ivory)
Veneering ceramic	Cercon® ceram kiss Cercon® ceram express
Coloring	Using layering or painting techniques
Indications in the anterior and posterior tooth region	<ul style="list-style-type: none"> • Primary telescope crowns • Crowns • Multi-unit bridges with a max. anatomical length of 47 mm (intermediate units between the abutment crowns) • Inlay bridges
Contraindications	Bruxism and therapy-resistant parafunctions
Temporary fixing	Possible
Definitive fixing	By means of conventional cementation or adhesive bonding techniques

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